

Attorney Docket No. 52003-8001.US01

Amendments to the Claims:

Following is a complete listing of the claims pending in the application, as amended:

Claims 1-18 (canceled)

19. (Currently Amended) An apparatus for interrogating a field having a plurality of PREs distributed therein, comprising

an optical light source for illuminating the a field having a plurality of plasmon resonant entities (PREs) distributed therein,

an optical detector for detecting a spectral emission characteristics of individual PREs and other light scattering entities in the field, when the field is illuminated by the light source,

an image processor operatively connected to the detector for constructing, from signals received from the detector, a computer image of the positions and values of the spectral emission characteristic of individual PREs and ~~such~~ other light-scattering entities present in the field,

discriminator means for discriminating PREs with a selected spectral signature from other light-scattering entities in the computer image, and

output means for displaying information about the field based on the information about the selected PREs.

20. (original) The apparatus of claim 19, wherein said light source includes a bright field/dark field lens for directing light onto the field.

21. (original) The apparatus of claim 19, wherein said light source includes means for illuminating the field at each of a plurality of different wavelengths.

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22. (original) The apparatus of claim 19, wherein said detector is a two-dimensional photodetector array capable of detecting a spectral emission characteristic simultaneously from a plurality of illuminated PREs in an illuminated field.

23. (Currently amended) The apparatus of claim 19, wherein said detector includes means for spectrally separating light emitted from the PREs, and said image processor operates to form a computer image of the positions and values of the emission spectral characteristic of individual PREs and such other light-scattering entities present in the field at each of a plurality of different emission wavelengths.

24. (original) The apparatus of claim 23, wherein the optical detector includes a two-dimensional array of optical fibers whose output is aligned so as to constitute a line source that is sent into a grating or prism for responding to that line source, and a two-dimensional detector array for responding to the spread of spectral light of each fiber in said line source of detected light.

25. (Currently amended) The apparatus of claim 19 or 23, which further includes means for moving said ~~target~~ field in an x-y plane, relative to said light source, to successively illuminate individual light-scattering entities in the field.

26. (original) The apparatus of claim 19, wherein said image processor operates to construct an image of PRE positions and, for each light-scattering entity in the field, values of a spectral characteristic selected from the group consisting of peak position, peak intensity, or peak width at half intensity of the spectral emission curve, peak halfwidth in the image plane, and polarization or angle of incidence response.

27. (original) The apparatus of claim 19, wherein said image processor operates to construct an image of PRE positions and, for each light scattering entity in the field, a value of a spectral characteristic selected from the group consisting of fluorescence emission spectrum and Raman spectrum.

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28. (original) The apparatus of claim 19, wherein said discriminator means includes means for discriminating PREs with a selected spectral signature from all other light-scattering entities in the field, based on detected values, for each light-scattering entity in the field, of peak position, peak intensity, or peak width at half intensity of the spectral emission curve, peak halfwidth in the image plane, and polarization or angle of incidence response.

29. (Currently amended) The apparatus of claim 2919, wherein said discriminating is effective to discriminate for a selected type of PREs, those selected PREs which are interacting with one another and those which are not, or one selected type of PRE from another selected type of PRE in the field.

Claims 30-56 (canceled)